Example Architectures

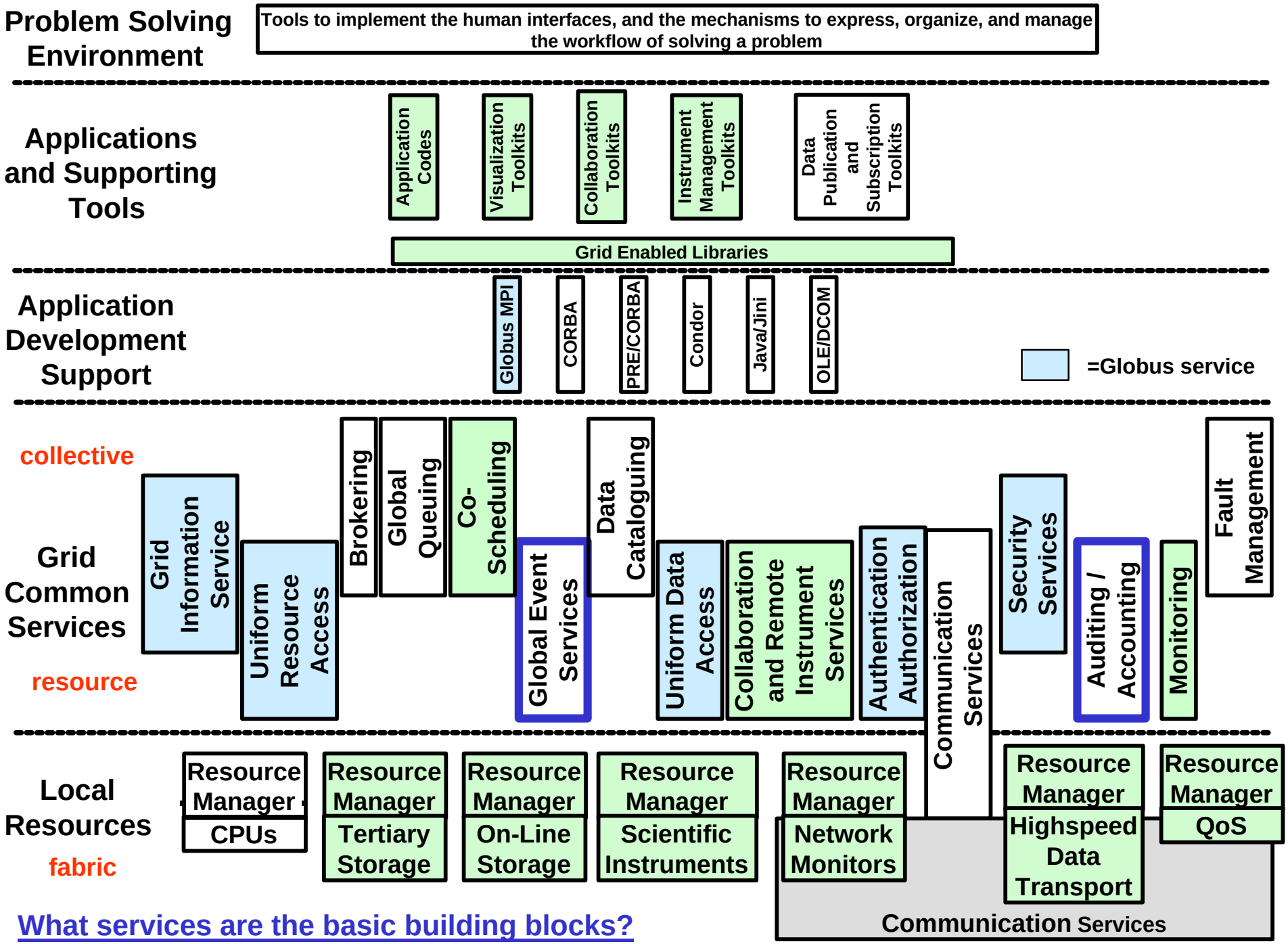
We now have probably four different approaches to defining / illustrating architectures in the examples:

1) layers of increasing abstraction
   - 1.1) taxonomy #1 (“Johnston”)
   - 1.2) taxonomy #2 (“Moore-Johnston”)
   - 1.3) taxonomy #3 (“Foster, Kesselman, et al”)

2) building block interactions
   - 2.1) data architecture –1 (Moore)
   - 2.2) data architecture – 2 (Moore)
   - 2.3) Aydt

3) concept space
   - 3.1) Moore

4) hybrid of a building blocks and concept space
   - 4.1) EU Data Grid Arch., Fisher, et al

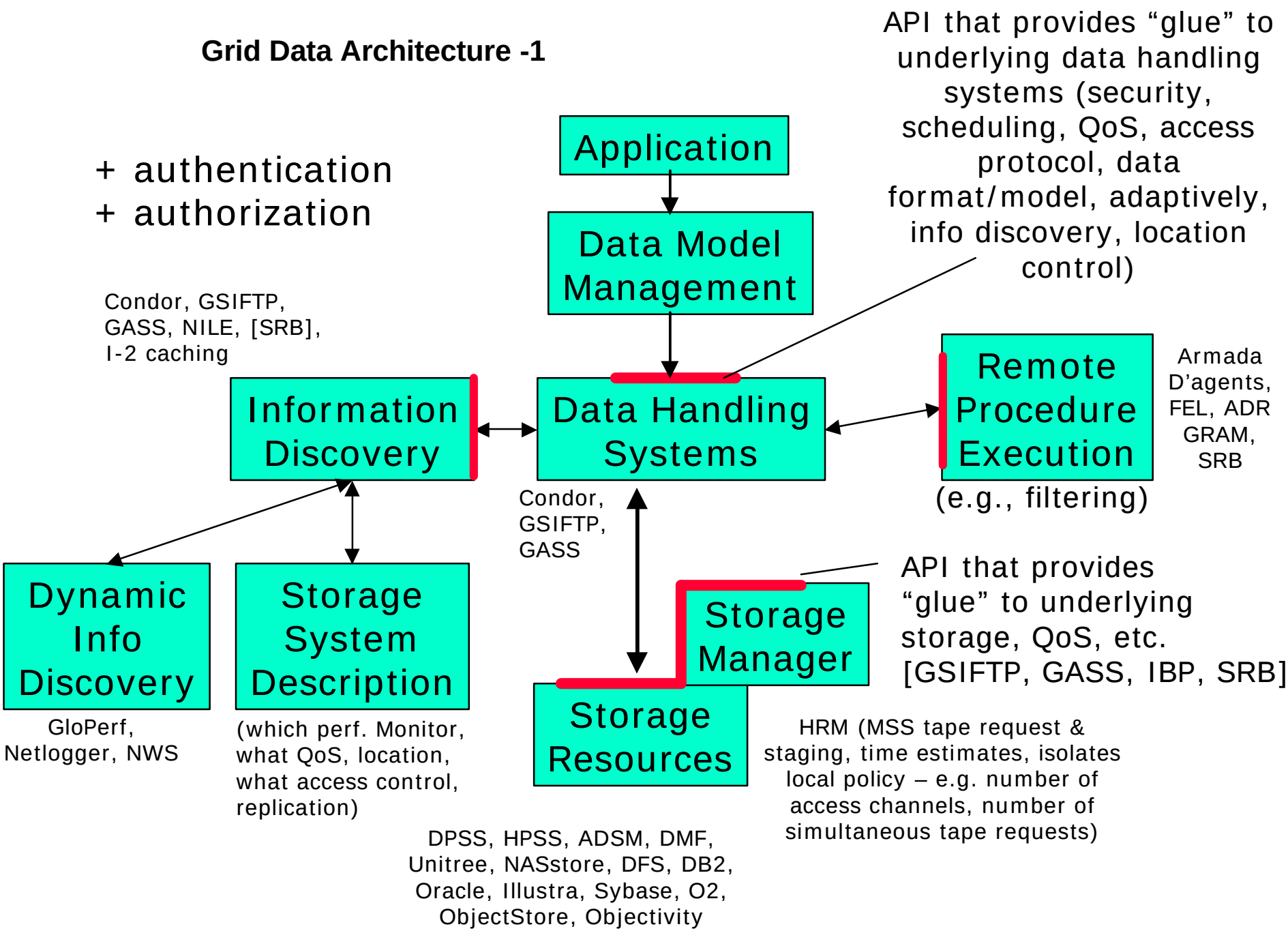

Problem Solving Environment
Tools to implement the human interfaces, and the mechanisms to express, organize, and manage the workflow of solving a problem
Applications and Supporting Tools
Application Codes
Visualization Toolkits
Collaboration Toolkits
Instrument Management Toolkits
Data Publication and Subscription Toolkits
Grid Enabled Libraries
Application Development Support
Globus MPI
CORBA
PRE/CORBA
Condor
Java/Jini
OLE/DCOM
=Globus service
collective
Grid Common Services
resource
Grid Information Service
Uniform Resource Access
Brokering
Global Queuing
Co-Scheduling
Global Event Services
Data Cataloguing
Uniform Data Access
Collaboration and Remote Instrument Services
Authentication Authorization
Communication Services
Security Services
Auditing / Accounting
Monitoring
Fault Management
Local Resources
fabric
Resource Manager
CPUs
Resource Manager
Tertiary Storage
Resource Manager
On-Line Storage
Resource Manager
Scientific Instruments
Resource Manager
Network Monitors
Resource Manager
Highspeed Data Transport
Resource Manager
QoS
Communication Services
What services are the basic building blocks?

Grid Forum “Interactions”

GF WG “Levels”	Data	Accounting	Scheduling	Performance	Information Services	Grid Computing Environment
Higher services	file, object, collection access	accounting interface	scheduler interface	monitoring data consumer	information discovery	workbench, portal, PSE
Management	replica catalog	user registration	distributed scheduler manager	monitoring aggregation server	resource addition service	process / workflow management
Persistence, …	metadata catalogue	Grid usage repository	reservation information	monitor repository	Grid resource naming repository	portal state information
Resource Abstraction Standards	GridFTP, ODBC, SRB	audit information exchange	policy request description exchange	monitor information exchange	resource capability info. exch.	standard run environment interface
Transport and Security					SDLIP	
	GSS, PKI, TLS, TCP/IP					
Resource Interfaces	storage system interfaces	usage tracking interface	local sched. intf., policy intf.	monitor data producer	info. repository interface	local run environment interface

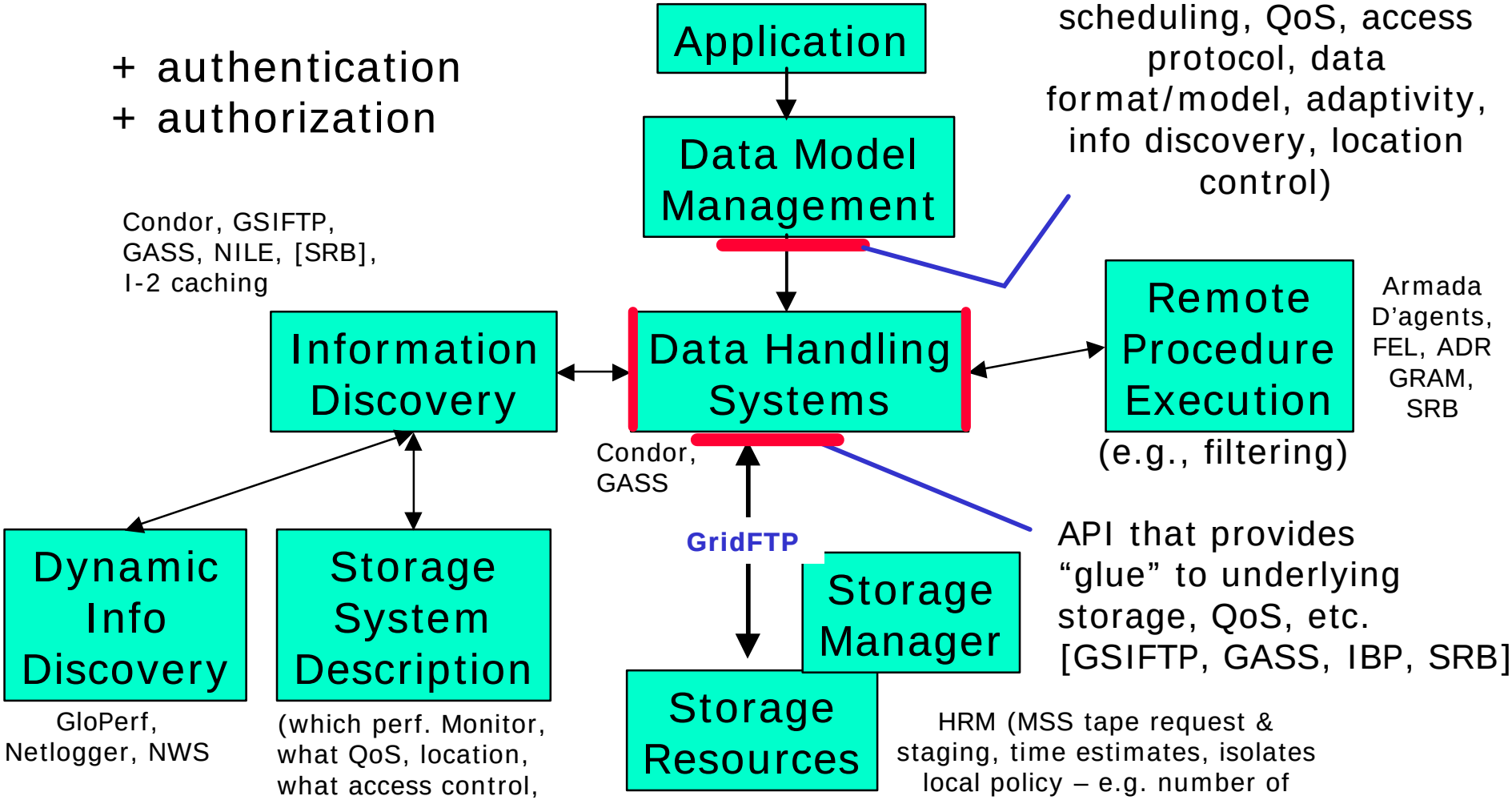
What services are the basic building blocks?

Grid Data Architecture -1



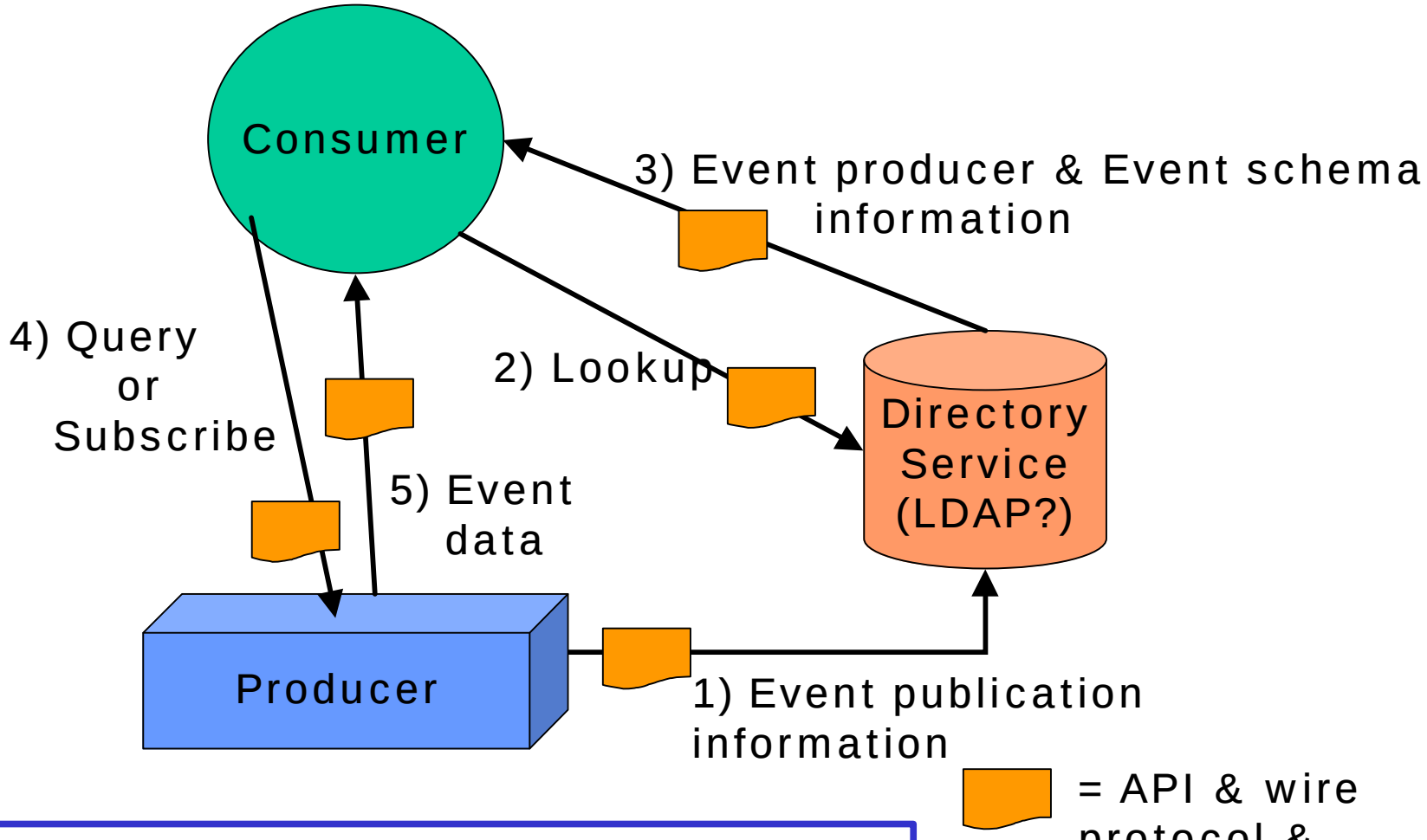
Complex services may be difficult to reduce to "basic" protocols" that are useful.

Grid Data Architecture -2



People tend not to think in terms of protocols.

Performance Working Group Architecture

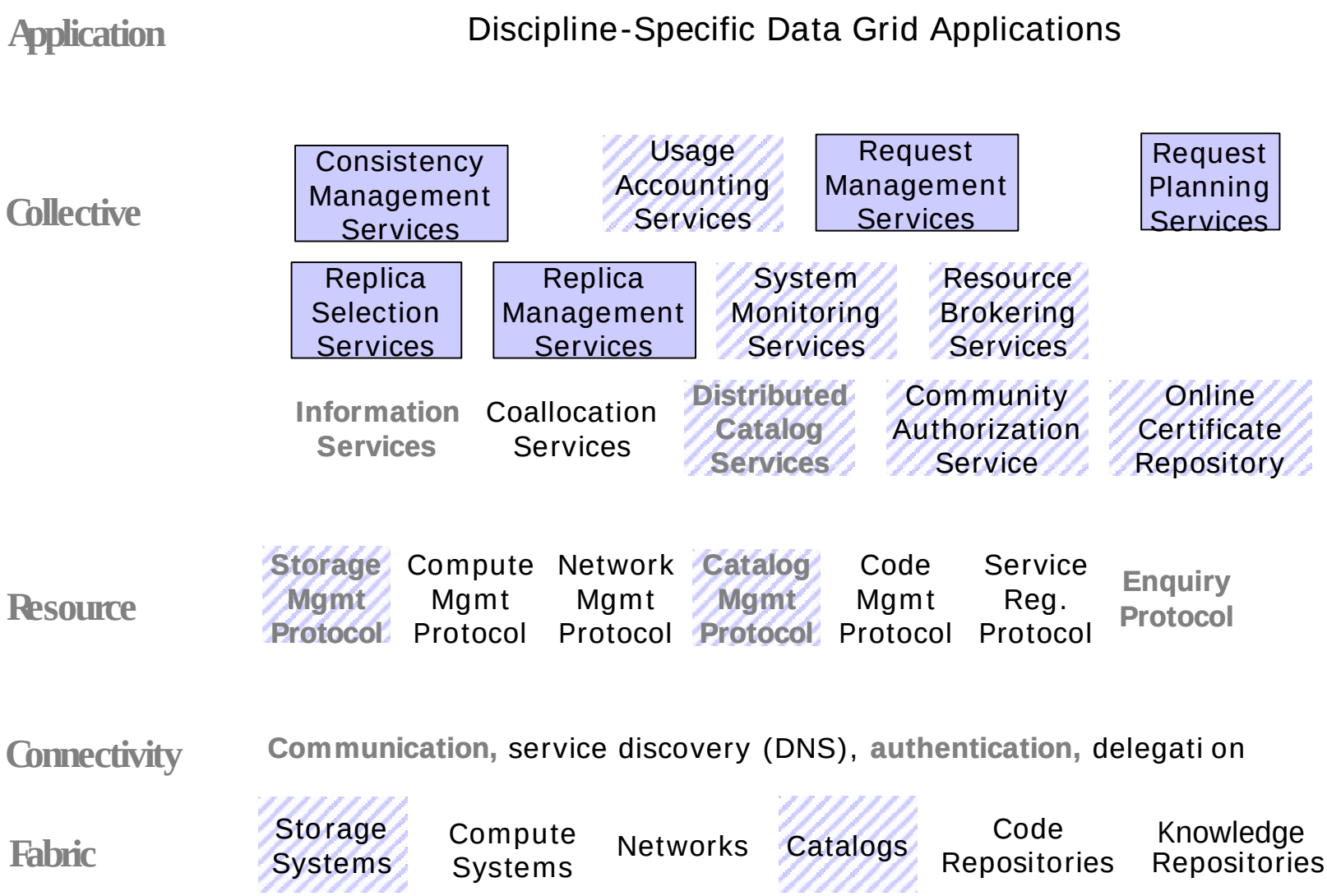


Another challenge will be to compare protocols that are being developed to the GPArch and make the assessment as to whether this is a "basic" building block or can it be built on lower level protocols or should it use existing building blocks (e.g. an event service).

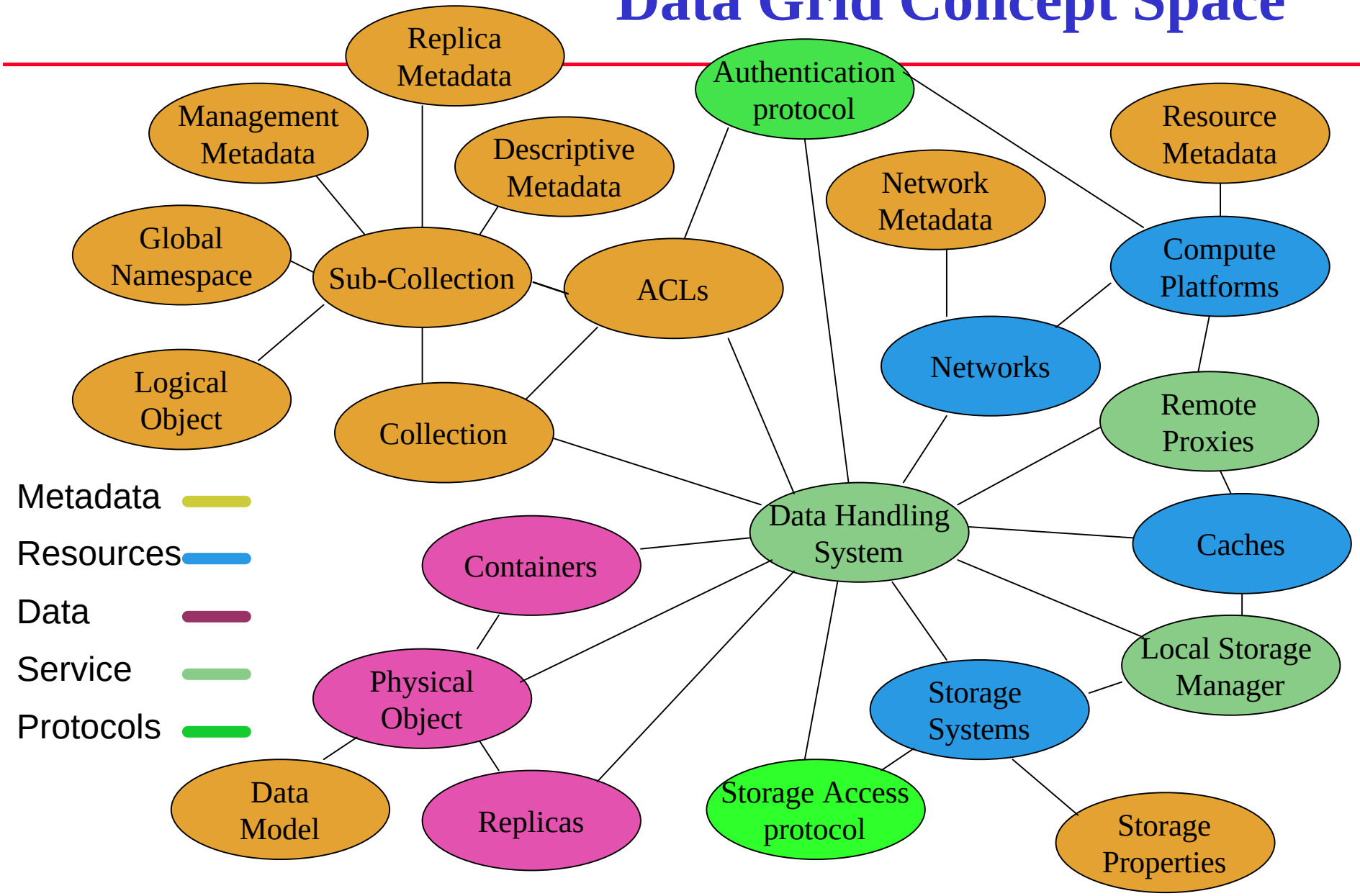
Plus security!

Ruth Aydt – GGF1
Performance Working Group

Foster, Kesselman, et al, Architecture



Data Grid Concept Space



EU Data Grid Architecture